I claim:

1. A method for stimulating *in vitro* erythropoiesis comprising culturing bone marrow or peripheral blood cells with a composition comprising an amount of thrombopoietin (TPO) and erythropoietin (EPO) sufficient to produce an increase in the number of erythrocytes or erythrocyte precursors as compared to cells cultured in the absence of TPO.

2. The method of claim 1, wherein the amount of TPO is 10 pg/ml to 10 ng/ml and the amount of EPO is 0.5 units/ml to 5 units/ml.

3. The method of claim 1, wherein the TPO is human or mouse TPO.

4. The method of claim 1, wherein the TPO comprises a sequence of amino acids selected from group consisting of:

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to amino acid residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 172

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 175; and

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 353.

5. A method of stimulating *in vitro* erythropoiesis comprising culturing bone marrow or peripheral blood cells with an amount of TPO sufficient to produce an increase in the number of erythrocytes or erythrocyte precursors as compared to cells cultured in the absence of TPO.

6. The method according to claim 5, wherein the amount of TPO is 100 pg/ml to 10 ng/ml.

7. The method of claim 5, wherein the TPO is human or mouse TPO.

8. The method of claim 5, wherein the TPO comprises a sequence of amino acids selected from group consisting of:

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to amino acid residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 175; and

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 353.

9. A method for stimulating erythropoiesis comprising administering to a mammal in need thereof a composition comprising TPO in combination with a pharmaceutically acceptable vehicle in an amount sufficient to produce an increase in proliferation or differentiation of erythroid cells.

~~10~~. The method of claim ~~9~~, wherein said mammal has a hemoglobin level of less than 11 gm/100 ml of blood.

~~11~~. The method of claim ~~9~~, wherein said mammal has a hematocrit of less than 30%.

~~12~~. The method of claim ~~9~~, wherein said mammal has a reticulocyte count of less 0.8%.

~~13~~. The method of claim ~~9~~, wherein said mammal has been treated with radiation or chemotherapy.

~~14~~. The method of claim 9, wherein the TPO is human TPO.

15. The method of claim 9, wherein the TPO comprises a sequence of amino acids selected from group consisting of:

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to amino acid residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 175; and

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 353.

~~16~~. The method of claim ~~9~~, wherein 1.0×10^5 to 100×10^5 units TPO/kg/day is administered to said mammal.

~~17~~. The method of claim ~~9~~, wherein 1.2 μg/kg/day to 114 μg TPO/kg/day is administered to said mammal.

~~18~~. A method for stimulating erythropoiesis comprising administering to a mammal in need thereof a

composition comprising TPO and EPO in combination with a pharmaceutically acceptable vehicle in an amount sufficient to produce an increase in proliferation or differentiation of erythroid cells.

~~19~~ 10. The method of claim ~~18~~ 9, wherein said mammal has a hemoglobin level of less than 11 gm/100 ml of blood.

~~20~~ 11. The method of claim ~~18~~ 9, wherein said mammal has a hematocrit of less than 30%.

~~21~~ 12. The method of claim ~~18~~ 9, wherein said mammal has a reticulocyte count of less than 0.8%.

~~22~~ 13. The method of claim ~~18~~ 9, wherein said mammal has been treated with radiation or chemotherapy.

~~23~~ The method of claim 18, wherein the TPO is human TPO.

~~24~~ 14. The method of claim ~~18~~ 9, wherein the EPO is human EPO.

25. The method of claim 18, wherein the TPO comprises a sequence of amino acids selected from group consisting of:

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 1 to amino acid residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 353;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 22 to residue 175;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 172;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 173;

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 175; and

the sequence of amino acids shown in SEQ ID NO:2 from amino acid residue 28 to residue 353.

16 ~~26~~. The method of claim 9 ~~18~~, wherein 1.0×10^5 to 100×10^5 units TPO/kg/day and 1 to 150 units EPO/kg/day are administered to said mammal.

17 ~~27~~. The method of claim 9 ~~18~~, wherein 1.2 μg/kg/day to 114 μg TPO/kg/day and 1 to 150 units EPO/kg/day are administered to said mammal.

15 28. A method for stimulating erythropoiesis comprising administering to a patient in need thereof a composition comprising TPO and EPO, in combination with a pharmaceutically acceptable vehicle, in an amount sufficient for increasing reticulocyte counts at least 2-fold over baseline reticulocyte counts.

29. A method for stimulating erythropoiesis comprising administering to a patient in need thereof a composition comprising TPO, in combination with a pharmaceutically acceptable vehicle, in an amount sufficient for increasing reticulocyte counts at least 2-fold over baseline reticulocyte counts.

30. A method of stimulating erythropoiesis and thrombopoiesis comprising administering to a patient in need thereof a composition comprising TPO and EPO, in combination with a pharmaceutically acceptable vehicle, in an amount sufficient for increasing reticulocyte counts at least two-fold over baseline reticulocyte counts and platelet levels to at least 20,000/mm^3.